



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/567,182

02/03/2006

Ken Iizuka

112857-672

1180

29175

7590

05/22/2009

K&L Gates LLP
P. O. BOX 1135
CHICAGO, IL 60690

EXAMINER

WOLDEMARIAM, AKILILU K

ART UNIT

PAPER NUMBER

2624

MAIL DATE

DELIVERY MODE

05/22/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/567,182	Applicant(s) IIZUKA, KEN	
	Examiner AKLILU k. WOLDEMARIAM	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13-23 and 25-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-23 and 25-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/11/2008, 02/03/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 06/11/2008 was filed after the mailing date of 06/11/2008. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Response to restriction

3. Applicant elected with out traverse, Group I: claims 1-11, 13-23 and 25-35 on 02/20/2009.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 1-11 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. The Federal Circuit¹, relying upon Supreme Court precedent², has indicated that a statutory "process" under 35 U.S.C. 101 must (1) be tied to a particular machine or apparatus, or (2) transform a particular article to a

¹ *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

² *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

Art Unit: 2624

different state or thing. This is referred to as the "machine or transformation test", whereby the recitation of a particular machine or transformation of an article must impose meaningful limits on the claim's scope to impart patent-eligibility (See *Benson*, 409 U.S. at 71-72), and the involvement of the machine or transformation in the claimed process must not merely be insignificant extra-solution activity (See *Flook*, 437 U.S. at 590"). While the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform an article nor are positively tied to a particular machine that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. *In claim 1 in the steps "a first step of performing an image processing" and "a second step of performing a matching" do not have any "computer" or "processor" or "device" to carry out all the steps of in claim 1. It is clear that claim 1 is not tied to a particular machine. And also claim 1 has (a) physical or chemical transformation of a physical object, (b) has modification to data or signal; (c) claim 1 does not have either displaying or printing anywhere in claim 1; (d) Modification and/or transformation no meaningful or insignificant. Therefore claim 1 requires computers or processors or device after the word "after the word "comprising".*

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32

Art Unit: 2624

F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and Warmerdam, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

6. Claims 25-35 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 25 defines a computer program embodying functional descriptive material (i.e., a computer program or computer executable code). However, the claim does not define a "computer-readable medium or computer-readable memory" and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests amending the claim(s) to embody the program on "computer-readable medium" or equivalent; assuming the specification does NOT define the computer readable medium as a "signal", "carrier wave", or "transmission medium" which are deemed non-statutory (refer to "note" below). Any amendment to the claim should be commensurate with its corresponding disclosure. Therefore claim 25 requires a computer readable medium to store a program.

Art Unit: 2624

Note:

“A transitory, propagating signal ... is not a “process, machine, manufacture, or composition of matter.” Those four categories define the explicit scope and reach of subject matter patentable under 35 U.S.C. § 101; thus, such a signal cannot be patentable subject matter.” (In re Nuijten, 84 USPQ2d 1495 (Fed. Cir. 2007)). Should the full scope of the claim as properly read in light of the disclosure encompass non-statutory subject matter such as a “signal”, the claim as a whole would be non-statutory. Should the applicant’s specification define or exemplify the computer readable medium or memory (or whatever language applicant chooses to recite a computer readable medium equivalent) as statutory tangible products such as a hard drive, ROM, RAM, etc, **as well as** a non-statutory entity such as a “signal”, “carrier wave”, or “transmission medium”, the examiner suggests amending the claim to include the disclosed tangible computer readable storage media, while at the same time excluding the intangible transitory media such as signals, carrier waves, etc.

Merely reciting functional descriptive material as residing on a tangible medium is not sufficient. If the scope of the claimed medium covers media other than “computer readable” media (e.g., “a tangible media”, a “machine-readable media”, etc.), the claim remains non-statutory. The full scope of the claimed media (regardless of what words applicant chooses) should not fall outside that of a computer readable medium.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2624

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-11, 13-23 and 25-35 rejected under 35 U.S.C. 103(a) as being unpatentable over Hirosyuki, (Japan Publication number 10-02-1391 from IDS) in view of Masaaki (Japan Publication number 11-003421 from IDS).

Regarding claims 1, 13 and 25, *Hiroyuki discloses* an image matching method for performing a matching images to linear components in a first image and a second image and an image matching apparatus performing a matching to linear components in a first image and a second image and a program that causes an information processing device to perform a matching images to linear components in a first image and a second image (*see paragraph [0001], compare both images based on this result computed result and compare referred to matching images*), the method, the apparatus and the program comprising:

a first step of performing an image processing for performing points in each image of the first image and the second image to a curved pattern and the linear components in each image to a plurality of overlapped curved-patterns (*see paragraph [0001], compare both images based on this result computed result and paragraph [0010] performing hough transformation with matching reference logarithmic coordinate and matching reference logarithmic coordinate referred to with overlapped curved pattern*).

and generating a first transformed image and a second transformed image (*see paragraph [0010] two dimensional image matching and paragraph [0015]-[0019] an*

Art Unit: 2624

angle rotation and the rate calculating means of zooming or an amount calculating means of parallel translation and hough transformation), and

a second step of performing a matching of the first image and the second image based on a degree of an overlap of the patterns in the first transformed image and the second transformed image generated in the first step and a matching or mismatching of the patterns in the first and second transformed images image (*see paragraph [0010] two dimensional image matching and paragraph [0015]-[0019] an angle rotation and the rate calculating means of zooming or an amount calculating means of parallel translation and hough transformation and matching reference logarithmic coordinate referred to with overlapped curved pattern*).

Hiroyuki does not disclose based on a distance from a reference position to a shortest point in a straight line passing through a point in the image and an angle between a straight line passing through the reference position and the shortest point and a reference axis including the reference position.

However, Masaaki discloses based on a distance from a reference position to a shortest point in a straight line passing through a point in the image and an angle between a straight line passing through the reference position and the shortest point and a reference axis including the reference position (*see paragraph [0003], [0012], [0019] and [0025] linear components referred to shortest distance*).

It would have been obvious to ordinary skill in the art at the time when the invention was made to use Masaaki's based on a distance from a reference position to a shortest point in a straight line passing through a point in the image and an angle between a

Art Unit: 2624

straight line passing through the reference position and the shortest point and a reference axis including the reference position in Hiroyuki's an image matching method for performing a matching images to linear components in a first image and a second image because it will allow to reduce computer storage capacity also to shorten computer processing and to reduce the effect of noise by calculating an edge point that is equal or more than threshold from the intensity of a differential value of an edge point [*Masaaki's, see abstract, lines 1-3*].

Regarding claims 2, 14 and 26, *Masaaki discloses an image matching method as set forth in claim 1, wherein the first step comprises a third step of extracting regions each of which indicates a degree of the overlap of the curved patterns in the transformed image equal to or greater than a threshold set in advance, from the first transformed image and the second transformed image (see abstract, calculating an edge point that is equal to or more than threshold from the intensity of differential value of an edge and acquiring an image data that has inclination direction components and paragraph [0003] extract line segment and paragraph [0008] hough transformation as a line segment extraction method), and*

wherein, in the second step, the matching of the first image and the second image are carried out based on the matching or mismatching of the patterns in the regions extracted from the first transformed image and the second transformed image respectively in the third step (*see abstract, calculating an edge point that is equal to or more than threshold from the intensity of differential value of an edge and acquiring an image data that has inclination direction components and paragraph [0003] extract line*

Art Unit: 2624

segment and paragraph [0008] hough transformation as a line segment extraction method).

Regarding claims 3, 15 and 27, *Masaaki discloses an image matching method as set forth in claim 2, wherein, in the third step, the threshold is determined based on a size of the extracted region such that the size of the extracted region is larger than the set value*

(see abstract, calculating an edge point that is equal to or more than threshold from the intensity of differential value of an edge and acquiring an image data that has inclination direction components).

Regarding claims 4, 16 and 28, *Masaaki discloses an image matching method as set forth in claim 2, wherein, in the third step, the threshold is determined based on the size of the extracted region such that the size of the extracted region is within the set value (see abstract, calculating an edge point that is equal to or more than threshold from the intensity of differential value of an edge and acquiring an image data that has inclination direction components and paragraph [0003] extract line segment and paragraph [0008] hough transformation as a line segment extraction method).*

Regarding claims 5, 17 and 29, *Masaaki discloses an image matching method as set forth in claim 2, wherein, in the third step, the image is deleted when the size of the extracted region is less than the set value (see abstract, calculating an edge point that is equal to or more than threshold from the intensity of differential value of an edge and acquiring an image data that has inclination direction components and paragraph*

Art Unit: 2624

[0003] extract line segment and paragraph [0008] hough transformation as a line segment extraction method).

Regarding claims 6, 18 and 30, *Hiroyuki* discloses an image matching method as set forth in claim 1, wherein, in the first step, a Hough transform processing is performed to the first image and the second image to generate the first transformed image and the second transformed image (*see paragraph [0001], compare both images based on this result computed result and compare referred to matching images and paragraph [0010] two dimensional image matching and paragraph [0015]-[0019] an angle rotation and the rate calculating means of zooming or an amount calculating means of parallel translation and hough transformation).*

Regarding claims 7, 19 and 31, *Hiroyuki* discloses an image matching method as set forth in claim 1, wherein, in the second step, a comparison processing is performed to a plurality of different positional relationships in the first transformed image and the second transformed image generated in the first step (*see paragraph [0001], compare both images based on this result computed result and compare referred to matching images and paragraph [0042]-[0045] compute correlation);*

a similarity-as a correlation value is generated based on a result of the comparison processing, and the matching of the first image and the second image are carried out based on the generated similarity (*see paragraph [0001], compare both images based on this result computed result and compare referred to matching images and paragraph [0042]-[0045] compute correlation).*

Regarding claims 8, 20 and 32, *Hiroyuki discloses* an image matching method as set forth in claim 1, before the first step, further comprising a tenth step of performing a position correction processing to the first image and the second image, wherein, in the first step, the image processing is performed to the first image and the second image which are results of the position correction processing in the tenth step to generate the first transformed image and the second transformed image (*see paragraph [0001], compare both images based on this result computed result and compare referred to matching images and paragraph [0042]-[0045] compute correlation*).

Regarding claims 9, 21 and 33, *Hiroyuki discloses* an image matching method as set forth in claim 8, wherein, in the tenth step, as the position correction processing, a correlation value is generated based on a phase component which is a result of a rotation angle correction processing or an enlargement ratio correction processing and the Fourier transform processing to the first image and the second image, and the position correction processing is performed to the first image and the second image based on the generated correlation value (*see paragraph [0001], compare both images based on this result computed result and compare referred to matching images and paragraph [0010] calculate a cross correlation and angle rotation and paragraph [0042]-[0045] compute correlation*).

Regarding claims 10, 22 and 34, *Hiroyuki discloses* an image matching method as set forth in claim 8, wherein, in the tenth step, a plurality of the correlation value indicating a corrected position is generated by a correlation processing to the first image and the second image, and a plurality of the position correction processing is

Art Unit: 2624

performed to the first image and the second image based on the generated correlation value (*see paragraph [0001], compare both images based on this result computed result and compare referred to matching images and paragraph [0010] calculate a cross correlation and angle rotation and paragraph [0042]-[0045] compute correlation*),

in the first step, the image processing is performed to the results of the plurality of the position correction processing of the first image and the second image in the tenth step to generate the first transformed image and the second transformed image, and in the second step, the correlation value is generated based on the patterns in the first transformed image and the second transformed image generated in the first step (*see paragraph [0001], compare both images based on this result computed result and compare referred to matching images and paragraph [0010] calculate a cross correlation and angle rotation and paragraph [0042]-[0045] compute correlation*); and the matching of the first image and the second image are carried out based on the generated correlation value and the threshold set in advance (*see paragraph [0001], compare both images based on this result computed result and compare referred to matching images and paragraph [0010] calculate a cross correlation and angle rotation and paragraph [0042]-[0045] compute correlation*).

Regarding claims 11, 23 and 35, *Hiroyuki discloses* an image matching method as set forth in claim 10, wherein, the second step, the matching of the first image and the Second image are carried out to the result of the plurality of the position correction processing generated in the first step based on the total amount of the correlation value corresponding to different positions and the threshold set in advance

Art Unit: 2624

(see paragraph [0001], compare both images based on this result computed result and compare referred to matching images and paragraph [0010] calculate a cross correlation and angle rotation and paragraph [0042]-[0045] compute correlation).

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to AKLILU k. WOLDEMARIAM whose telephone number is (571)270-3247. The examiner can normally be reached on Monday-Thursday 6:30 a.m-5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on 571-272-413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Brian Le
Primary Examiner
Art Unit 2624

Application/Control Number: 10/567,182
Art Unit: 2624

Page 14

/A. k. W./
Examiner, Art Unit 2624
05/13/2009

/Brian Q Le/
Primary Examiner, Art Unit 2624